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SCIENTIFIC NOTE

ANOPHELES (NYSSORHYNCHUS) PICTIPENNIS: A NEW MOSQUITO RECORD FROM THE ATACAMA REGION OF NORTHERN CHILE

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ABSTRACT. We report the first collection of *Anopheles pictipennis* from northern Chile, particularly sectors of Totoral, Perales, Puerto Viejo, and Salinas in the Atacama region. Adults were captured using human bait, while larvae and pupae were collected from various habitats including ponds, puddles left by overflowing river water, edges along river banks, wells, irrigation ditches, and permanent and semipermanent ground water. Associated species were *Culex* (*Culex*) *quinquefasciatus* and *Ochlerotatus albifasciatus*. The internal transcribed spacer 2 of the ribosomal DNA of *An. pictipennis* was sequenced.

KEY WORDS *Anopheles pictipennis*, *Culex quinquefasciatus*, *Ochlerotatus albifasciatus*, Atacama, northern Chile, new record

Although only a few human malaria cases were reported from Chile before 1943 (Neghme 1943), nothing is known from the Atacama region of northern Chile. *Anopheles pseudopunctipennis* Theobald occurs in the northern part of the Tarapoca region (located between 18°25'S and 20°35'S) where malaria is endemic (Linthicum 1988). It is a dominant malaria vector in 7 of 19 countries with endemic malaria (Pan American Health Organization [PAHO] 1994), including the neighboring countries of Argentina, Bolivia, and Peru (Manguin et al. 1996, Rueda et al. 2004). Russell et al. (1943) reported that the relation of *An. pictipennis* (Philippi) to malaria is unknown, although Neghme (1943) experimentally infected 8 of 23 female mosquitoes (34.7%) with *Plasmodium vivax*. In Santiago, this species rarely feeds on humans, but it is highly attracted to domestic animals (Linthicum 1988).

In this paper, we report *An.* (*Nyssorhynchus*) *pictipennis* (Philippi) as a new record for the northern part of Chile. In 2003 and 2004, as part of a mosquito surveillance program of the Ministry of Health, extensive collections of mosquito larvae, pupae, and adults were conducted from various habitats in northern Chile, specifically from the Atacama Region, including Puerto Viejo (27°19'S, 70°58'W), Salinas (27°15'S, 70°53'W), Totoral (27°54'S, 70°58'W), and Perales (27°53'S,70°55'W). Puerto Viejo and Salinas are in coastal areas near the Copiapo River. A notable feature of this river is the thick vegetation commonly found along its banks. Totoral and Perales are about 90 km south of Puerto Viejo and Salinas, and about 30 km from the coast. Permanent and semipermanent groundwater is commonly found in all 4 sectors. In most dry areas man-made wells are a primary source of water. Mosquito adults were caught using human bait, usually in the late afternoon. Using a standard dipper method, larvae and pupae were collected from various habitats including ponds, puddles left by overflowing river water, edges along river banks, man-made wells, irrigation ditches, and permanent groundwater. All specimens collected were sent to the Walter Reed Biosystematics Unit (WRBU), Washington, DC, where they were identified using the taxonomic keys of Linthicum (1988) and Lane (1953).

From the field-collected specimens, we identified 3 species: *An. pictipennis*, *Culex* (*Culex*) *quinquefasciatus* Say, and *Ochlerotatus* (=*Aedes*) *albifasciatus* (Macquart). *Anopheles pictipennis* was collected from Totoral and Perales on January 12, 19, and 20, 2004 (48 females, 1 pupa, 75 larvae), and from Puerto Viejo and Salinas on October 13, 2003 (7 females, 1 pupa, 3 larvae). Other associated species were *Cx. quinquefasciatus* from Totoral and Perales on October 13, 2003 (8 females, 1 pupa, 31 larvae), and January 20, 2004 (4 larvae), and from Puerto Viejo and Salinas on October 13, 2003 (4 larvae); and *Oc. albifasciatus* from Totoral and Perales on October 19, 2004 (34 females), January 12 and 19, 2004 (4 females), and Puerto Viejo and Salinas on October 13 and 30, 2003 (29 females), November 10, 2003 (4 females), April 24, 2004 (2 females).

Although Angulo and Olivares (1993) listed 27 mosquito species from Chile, only 11 species are now considered valid (Belkin et al. 1968, WRBU 2001). The currently known species are: *Cx. acharistus* Root, *Cx. annuliventris* (Blanchard),

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Cx. apicinus Philippi, *Cx. articularis* Philippi, *Cx. curvibrachius* Angulo, *Cx. dolosus* (Lynch Arribalzaga), *Cx. plicatus* Olivares, *Cx. quinquefasciatus*, *Oc. albifasciatus*, *An. pseudopunctipennis*, and *An. pictipennis*.

We also obtained the sequence of the internal transcribed spacer 2 sequence of this species (GenBank Accession No. EU433947). In South America, *An. pictipennis* is known only from Chile and Argentina (WRBU 2001). Russell et al. (1943) reported the occurrence of this species from Brazil, Chile, and Argentina. Linthicum (1988), however, was unable to confirm its distribution outside of Chile, and he noted that it is unlikely to occur in Brazil. He examined only 4 specimens (1 male, 3 females) from Santiago, Chile, with a collection date of January 1, 1927. Furthermore, he suggested that *An. pictipennis* is restricted to the central part of Chile, between the 32nd and 34th parallels, in the provinces of Aconcagua, Valparaiso, and Santiago.

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